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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,654	12/05/2003	Michael E. Seitz	MTC 6634.1(40-21(3584)US)	8454

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EXAMINER	
FRAZIER, BARBARA S	

ART UNIT	PAPER NUMBER
1611	

NOTIFICATION DATE	DELIVERY MODE
08/27/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspatents@senniger.com

Office Action Summary	Application No.	Applicant(s)	
	10/728,654	SEITZ ET AL.	
	Examiner	Art Unit	
	BARBARA FRAZIER	1611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-69* is/are pending in the application.

4a) Of the above claim(s) *6-8,13-16,37-39 and 44-47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9-12,17-36,40-43 and 48-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/27/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1-69 are pending in this application.

2. Claims 6-8, 13-16, 37-39, and 44-47 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/10/08.

3. Claims 1-5, 9-12, 17-36, 40-43, and 48-69 are examined.

Claim Rejections - 35 USC § 102

4. The rejection of claims 1-5, 9-12, 17-23, 27-36, 40-43, 48-54, and 58-69 are rejected under 35 U.S.C. 102(e) as being anticipated by Asrar et al (US Patent 6,992,047, hereinafter "Asrar '047") is withdrawn in view of Applicant's arguments that Asrar '047 does not specifically teach the requirement that the core material is a single phase liquid at 50°C.

5. The rejection of claims 1-5, 9-12, 17-23, 27-36, 40-43, 48-54, and 58-69 are rejected under 35 U.S.C. 102(a) as being anticipated by Asrar et al (WO 2002/082901, hereinafter "Asrar '901") is withdrawn in view of Applicant's arguments that Asrar '047 does not specifically teach the requirement that the core material is a single phase liquid at 50°C.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. The rejection of claims 24, 25, 55, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asrar et al (US Patent 6,992,047, "Asrar '047") is withdrawn in view of Applicant's statement that the present application, Application Ser. No. 10/728,654, and Patent No. 6,992,047 were at the time the invention of Application No. 10/728,654 was made, owned by or subject to an obligation of assignment to Monsanto Technology, LLC.

8. Claims 1-5, 9-12, 17-36, 40-43, and 48-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seitz et al (US Patent 5,925,595), alone or further in view of Asrar et al (WO 2002/082901, "Asrar '901").

The claimed invention is drawn to a pesticidal material comprising a substantially water-immiscible core material, the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about I00

days, the half- life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C (see claim 1), and an agricultural formulation comprising a dispersion of microcapsules (which comprise the pesticidal material) in an aqueous phase (see claim 32).

Seitz et al teach a microencapsulated composition comprising a capsule wall that comprises the polymerization product of a triisocyanate, an aliphatic diisocayante, and a polyamine, and an internal phase that comprises a first core chemical and a second core chemical (see claim 36). The triisocyanate Desmodur N3200 (the trifunctional biuret adduct of hexamethylene diisocyanate), the polyamine triethylene tetramine, and the core chemical alachlor (which is a single phase liquid at 50°C) are exemplified (see Examples 1-4). Seitz et al also teach that varying the ratios of isocyanates used in the formation of the shell wall will lead to optimizing properties of the shell wall, such as permeability (for example, see col. 4, line 64 - col. 5, line 7). Seitz et al also teach that different polyamines are suitable in the polymerized shell wall product (col. 8, lines 1-8). Seitz et al further teach that multifunctional isocyanates (i.e., di- and triisocyanates) are used in the polymerized shell wall product (for example, see columns 3 and 7). Release by molecular diffusion with half-lives of 74 days and 32 days are exemplified (Examples 16 and 17, column 16).

While Seitz et al suggest the use of several different polyamines in the microcapsule shell (col. 8, lines 1-5), Seitz et al do not specifically teach that an auxiliary amine (such as polyoxypropylene triamine) is used with the polyisocyanates and principal amine (such as triethylenetetramine, or TETA) to form the shell.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the microencapsulated composition by the polymerization of polyisocyanate, a principal amine (such as triethylene tetramine), and an auxiliary amine (such as polyoxypropylene triamine) according to the claimed invention, with a reasonable expectation of success.

It is generally *prima facie* obvious to combine prior art elements according to known methods to yield predictable results. See MPEP 2141 III (A). Since both triethylene tetramine and polyoxypropylene triamine would be expected to "function adequately" in the composition of Seitz et al., it would have been prima facie obvious to use both polyamines in the polymerization with the polyisocyanates in order to form the microencapsulated composition, with a reasonable expectation of success.

Additionally, since Seitz et al teach that one of the polyurea shell wall components (i.e., the isocyanate) may be varied by using more than one isocyanate in specified ratios in order to improve the permeability of the shell wall, it would be obvious to one skilled in the art to also try varying the other component of the polyurea shell wall (i.e., the polyamine) by using more than one amine in specified ratios in order to improve the permeability of the shell wall. One skilled in the art would reasonably expect success from the use of more than one amine in forming the shell wall because multifunctional isocyanates are used in forming the shell wall, as taught by Seitz et al, and therefore would reasonably accommodate more than one amine.

Additionally or alternatively, Asrar '901 teach that, in pesticidal materials comprising microcapsules formed by the interfacial polymerization of one or more types

of polyisocyanate with one or more polyamines (page 43), it is more preferred that two or more polyamines be used and that they be selected from diamines, triamines, and tetramines; even more preferred is the use of both a triamine, such as Jeffamine T-403 (a polyoxypropylene triamine), and a tetramine, such as TETA (page 45). Asrar et al further teach that the release rate of an agricultural active in the core of a microparticle having a polyurea shell, can be modulated by varying the ratio of the equivalents of a triamine and a tetramine (page 46).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the microencapsulated composition of Seitz et al by the polymerization of polyisocyanate and a two or more polyamines; thus arriving at the claimed invention. One skilled in the art would be motivated to do so because the use of two or more polyamines, such as a triamine and a tetramine, provides the benefit of increased modulation of the release rate of the agricultural active in the core of the polyurea shell, as taught by Asrar '901.

With respect to the agricultural formulation comprising a dispersion of microcapsules in an aqueous phase (claims 32-36, 40-43, and 48-69), Seitz et al. teach that an aqueous liquid is added to the combination of isocyanate and core chemical to form an oil-in-water emulsion before reacting the emulsion with a polyamine to form microcapsules which encapsulate the water-immiscible core chemical (see abstract). Therefore, the resultant microcapsules are dispersed in an aqueous liquid.

With respect to claims 2 and 33, the polyamines of Seitz et al. and Asrar '901 described above are not hydrolysis products of the polyisocyanate.

With respect to claims 3-5 and 34-36, the properties of predetermined and greater permeabilities would be present in the microcapsule and formulations of Seitz et al., given the fact that the microcapsule shell of Seitz et al. can be formed from the same components as those taught in the claimed invention.

With respect to claims 9, 22, 40, and 53, the properties relating to solubility would be present in the microcapsule and formulations of Seitz et al., given the fact that the microcapsule shell of Seitz et al. can be formed from the same components as those taught in the claimed invention.

With respect to claims 10-12, 17-18, 41-43, and 48-49, Seitz et al. teach that both triethylene tetramine and polyoxypropylene triamine are “expected to function adequately” in the microcapsule composition (col. 8, lines 1-5).

With respect to claims 19, 20, 50, and 51, Seitz et al. teach the use of Desmodur N3200 (the trifunctional biuret adduct of hexamethylene diisocyanate) as the triisocyanate (e.g., see Examples 1-4).

With respect to claims 21 and 52, the property of being "substantially non-porous" would be present in the shell of Seitz et al., given the fact that the microcapsule shell of Seitz et al. can be formed from the same components as those taught in the claimed invention.

With respect to claims 23-25 and 54-56, Seitz et al. teach that herbicides, such as the acetanilide alachlor, are particularly preferred core materials (col. 8, lines 20-22).

With respect to claims 26 and 57, Seitz et al. teach that “in one preferred embodiment, the core contains both a herbicide and a safener” (col. 8, lines 26-27).

With respect to claims 27-29 and 58-60, Seitz et al. teach that the core chemical can optionally have combined with it a hydrophobic diluent (col. 3, lines 53-54). Seitz et al. further teach that the chemical nature and the amount of core diluent used determines its effect on the release, stating that a poor solvent will decrease the release, and a good solvent will accelerate the release (col. 5, lines 29-37). Therefore, the addition of the diluent may affect the solubility parameters of the core material as disclosed in the claimed invention.

With respect to claims 30 and 61, Seitz et al. teach a wall to core ratio of 8% (e.g., see Examples 13 and 14); this is encompassed by Applicant's shell to core ratio of less than 33%.

With respect to claims 31, 62, 65, and 68, Seitz et al. teach a wall to core ratio of 8%, and an average size of 3 microns (Examples 13 and 14). Based on these measurements, the microcapsule would have a mass to volume ratio and a volumetric diameter distribution within the measurements of the claimed invention.

With respect to claim 63, the property of the viscosity of the dispersion of Seitz et al. would necessarily be encompassed by the viscosity ranges of the formulation of the claimed invention, given the fact that the size and weight of the shell and core of Seitz et al. are encompassed within the size and weight ranges of the claimed invention.

With respect to claim 64, Seitz et al. teach that the capsules have a particle size ranging from 2.2 to 4.5 microns (see Examples); this is encompassed by Applicant's range of 2 to 8 microns.

With respect to claim 66, Seitz et al. teach in Example 1 that the weight of the core and shell is 408.9 grams, and the total weight is 732.7 grams; therefore the weight percent of the capsule is 56% (see Example 1); this is encompassed by Applicant's range of less than 65 weight percent microcapsules.

With respect to claim 67, Seitz et al. teach that a preservative may be added to the formulation (col. 9, lines 29-30).

With respect to claim 69, Seitz et al. applying the formulation to agricultural fields of rox orange sorghum and barnyardgrass (e.g., see Example 15, column 13) and Dekalb corn hybrids (e.g., see Example 21, column 21).

Response to Arguments

9. Applicant's arguments with respect to claims 1-5, 9-12, 17-36, 40-43, and 48-69 have been considered but are moot in view of the new ground(s) of rejection. However, since the Examiner has retained the references of Seitz et al and Asrar '901, the Examiner will respond to arguments pertaining to said references.

In response to Applicant's arguments that the data of Seitz et al indicate dramatic changes in half life from one sample to the next, with "very little actual compositional change", the Examiner disagrees; the data appears to support the findings of Seitz, that is to say, the half-life of the composition can be manipulated by manipulating the isocyanate blend.

In response to Applicant's arguments that the Seitz reference would fail to enable those skilled in the art to achieve a defined half life using a combination of amines, even if such combination were otherwise suggested by the reference, it is noted that the

"defined half life" would be achieved by routine experimentation of the amine blends, and does not impart patentability to the claims. Additionally, the disclosure of Asrar '901 would motivate one skilled in the art to use a blend of amines in order to further modulate the release rates of the agricultural active.

Applicants argue that Seitz et al devoted "a mere 8 lines of their specification to describing adequately functioning amines", and therefore Seitz did not place any particular importance on the contributions of the amine component to the microcapsule. Applicants also argue that Seitz's mere disclosure of some amines would not have led the ordinarily skilled person to predict that any particular combination or ratio would yield microcapsules having a half life within the claimed range.

This argument is not persuasive because the amount of material devoted to a subject does not determine its "particular importance", contrary to Applicant's assertions. Additionally, one skilled in the art would reasonably predict success from the use of more than one of said amines to form the polyurea shell, especially in light of the fact that multifunctional isocyanates are used in forming the shell wall, as taught by Seitz et al, and therefore would reasonably accommodate more than one amine. Furthermore, the disclosure of Asrar '901 would motivate one skilled in the art to use a blend of amines in order to further modulate the release rates of the agricultural active.

Applicants argue that the various amines in Seitz et al's disclosure are merely listed together, without suggestion of their combination, or how to combine them, and the reasonable expectation of success requires predictability.

This argument is not persuasive because all of the amines taught by Seitz have the same function, i.e., are used as amines in the interfacial polymerization with polyisocyanates to form a polyurea shell for pesticidal materials. Therefore, one skilled in the art would reasonably predict success from the use of more than one of said amines to form the polyurea shell, especially in light of the fact that multifunctional isocyanates are used in forming the shell wall, as taught by Seitz et al, and therefore would reasonably accommodate more than one amine. Furthermore, the disclosure of Asrar '901 would motivate one skilled in the art to use a blend of amines in order to further modulate the release rates of the agricultural active.

In response to Applicant's arguments regarding previously undisclosed factors that may be manipulated by employing a principal amine and auxiliary amine (pages 34-37 of Applicant's remarks), it is noted that said factors are already taught in the disclosure of Seitz et al; for example, Seitz et al teach that varying the ratios of isocyanates used in the formation of the shell wall will lead to optimizing properties of the shell wall, such as permeability (for example, see col. 4, line 64 - col. 5, line 7).

Regarding the Asrar '901 reference, Applicants argue that each of the four inventors have provided Declarative evidence that the disclosure of the cited reference, in particular, the use of a blend of amines is the invention of the inventive entity of the pending case.

This argument is not persuasive because the Declaration is directed to the subject matter of U.S. Patent 6,992,047, and not the Asrar '901 reference, and do not state that the subject matter of the '047 reference is the same as the '901 reference.

Additionally, the inventorship of Asrar '901 is directed only to Jawed Asrar and Yiwei Ding, and the fact pattern of *In re Katz,* discussed by Applicants, does not apply here, as *Katz* was establishing inventive entity by removing, not adding, inventors.

Conclusion

No claims are allowed at this time.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BARBARA FRAZIER whose telephone number is

(571)270-3496. The examiner can normally be reached on Monday-Thursday 9am-4pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sharmila Landau can be reached on (571)272-0614. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BSF

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